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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/706,587	11/03/2000	James C. H. Thi	37355/CAG/B600	6915

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EXAMINER	
SCHULTZ, WILLIAM C	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/706,587	Applicant(s) THI ET AL.	
	Examiner William C. Schultz	Art Unit 2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7,9*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 3/16/2001,10/12/2001 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner.

Priority

1. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application); the disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

Specifically, provisonal 60/129,134 fails to disclose "detecting whether the near end signal comprises speech". The provisional just enables detecting a near end signal not what comprises the signal. Whether or not the near-end signal comprises speech is not clearly disclosed in a way that one of ordinary skill in the art to recognize that the applicant invented what is claimed.

Specifically, provisonal 60/136,685 fails to disclose anything connected with the claims. Echo cancellation is not clearly disclosed in a way that one of ordinary skill in the art to recognize that the applicant invented what is claimed.

Specifically, provisonal 60/160,124 fails to disclose anything connected with the claims. Echo cancellation is not clearly disclosed in a way that one of ordinary skill in the art to recognize that the applicant invented what is claimed.

The filing date for this application will be given the date of the parent application 09/548,400 which is 4/13/2000.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7,10-16,19-23,26-29,32-35,38-39,42-45,48-49,52 are rejected under 35 U.S.C. 102(b) as being anticipated by Sih [U.S. Pat. 5,307,405].

Regarding claim 1, Sih discloses all of the following subject matter: a method of conditioning a composite signal, the composite signal being formed by introducing a first signal into a second signal, comprising:

adaptively filtering**(fig. 5, adaptive filters 160,156,158; col. 9, lines 45-47)** the first signal; **(fig. 5, signal y(n); col. 9, lines 33-36)**

detecting the second signal **(fig. 5, signal v(n); col. 11, line 60 – col. 12, line 1)** in the composite signal; **(fig. 5, signal r(n); col. 9, lines 39-42)**

controlling filter adaptation of the first signal as a function of the second signal detection; and **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

recovering the second signal from the composite signal using the adaptively filtered first signal. **(fig. 5, signal e(n))**

Regarding claim 2, Sih further discloses the second signal recovery comprises subtracting the adaptively filtered first signal from the composite signal. **(fig. 5, part 148 is a summer but is taking a negative signal from switch 162)**

Regarding claim 3, Sih further discloses delaying the composite signal such that the second signal recovery occurs after the second signal detection. **(col. 9, line 65-col. 10, line 10)**

Regarding claim 4, Sih further discloses selectively disabling the filter adaptation. **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

Regarding claim 5, Sih further discloses disabling the filter adaptation when the second signal is detected in the composite signal. **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

Regarding claim 6, Sih further discloses filter adaptation is disabled by holding adaptation coefficients constant. **(col. 14, lines 2-5)**

Regarding claim 7, Sih further discloses the second signal detection comprises estimating an absolute value of a parameter of the composite signal, estimating a

maximum parameter of the first signal, comparing the absolute value of the composite signal parameter to the estimated maximum first signal parameter, and detecting the second signal as a function of the comparison. **(col. 17, line 67- col. 18, line 11)**

Regarding claim 10, Sih further discloses the second signal detection comprises pre-conditioning the composite signal, the second signal detection being a function of the first signal and the pre-conditioned composite signal. **(fig. 5, part 156)**

Regarding claim 11, Sih further discloses pre-conditioning of the composite signal comprises adaptively filtering the first signal a second time and subtracting the second adaptively filtered first signal from the composite signal. **(fig. 5, part 150 – second filtering)**

Regarding claim 12, Sih discloses all of the following subject matter: a method of canceling a far end echo from a near end signal, comprising:

adaptively filtering**(fig. 5, adaptive filters 160,156,158; col. 9, lines 45-47)** a far end signal; **(fig. 5, signal y(n); col. 9, lines 33-36)**

detecting whether the near end signal comprises speech; **(fig. 5, signal v(n); col. 11, line 60 – col. 12, line 1; col. 9, lines 39-42)**

disabling the filter adaptation when the near end signal complises speech; and **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

canceling the far end echo from the near end signal using the adaptively filtered far end signal. **(fig. 5, signal e(n))**

Regarding claim 13, Sih further discloses subtracting the adaptively filtered far end signal from the near end signal. **(fig. 5, part 148 is a summer but is taking a negative signal from switch 162)**

Regarding claim 14, Sih further discloses the echo cancellation comprises delaying the near end signal such that the echo cancellation occurs after the detection of the near end signal with speech. **(col. 9, line 65- col. 10, line 10)**

Regarding claim 15, Sih further discloses filter adaptation is disabled by holding adaptation coefficients constant. **(col. 14, lines 2-5)**

Regarding claim 16, Sih further discloses the detection of the near end signal with speech comprises estimating an absolute value of a parameter of the near end signal, estimating a maximum parameter of the far end signal, comparing the absolute value of the near end signal parameter to the estimated maximum far end signal parameter, and detecting whether the near end signal comprises speech as a function of the comparison. **(col. 17, line 67- col. 18, line 11)**

Regarding claim 19, Sih further discloses the detection of the near end signlal with speech comprising pre-conditioning the near end signal, the detection of the near end signal with speech being a function of the far end signal and the pre-conditioned near end signal. **(fig. 5, part 156)**

Regarding claim 20, Sih further discloses pre-conditioning of the near end signal comprises adaptively filtering the far end signal a second time and subtracting the second adaptively filtered far end signal from the near end signal. **(fig. 5, part 150 – second filtering)**

Regarding claim 21, Sih discloses all the following subject matter: a signal conditioner for conditioning a composite signal, the composite signal being formed by introducing a first signal into a second signal, the signal conditioner comprising:

an adaptive filter to filter the first signal; **(fig. 5, adaptive filters 160,156,158; col. 9, lines 45-47; col. 9, lines 33-36)**

logic to detect the second signal in the composite signal, **(fig. 5, signal v(n); col. 11, line 60 – col. 12, line 1; col. 9, lines 39-42)** the logic controlling the adaptation of the filter as a function of the second signal detection; and **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

a difference operator to subtract the filtered first signal from the composite signal to recover the second signal. **(fig. 5, part 148 is a summer but is taking a negative signal from switch 162)**

Regarding claim 22, Sih further discloses comprising a delay circuit in a path of the composite signal coupled to the difference operator, the composite signal being coupled to the logic before the delay circuit. **(fig. 5, part hpf is before difference operator)**

Regarding claim 23, Sih further discloses the delay circuit comprises a filter **(fig. 5, part 164)**

Regarding claim 26, Sih further discloses selectively disabling the filter adaptation. **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

Regarding claim 27, Sih further discloses disabling the filter adaptation when the second signal is detected in the composite signal. **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

Regarding claim 28, Sih further discloses filter adaptation is disabled by holding adaptation coefficients constant. **(col. 14, lines 2-5)**

Regarding claim 29, Sih further discloses comprising a first estimator to estimate an absolute value of a parameter of the composite signal, and a second estimator to estimate a parameter of the first signal, wherein the logic compares the absolute value of the composite signal parameter to an estimated maximum of the first signal parameter and detects the second signal as a function of the comparison. **(col. 17, line 67- col. 18, line 11)**

Regarding claim 32, Sih further discloses a second adaptive filter to filter the first signal a second time, **(fig.5 ,parts 160,158)** and a subtractor to subtract the second filtered first signal from the composite signal to generate a pre-conditioned composite signal, the logic detecting the second signal in the composite signal as a function of the pre-conditioned composite signal. **(fig. 5, part 148)**

Regarding claim 33, Sih discloses all the following subject matter: an echo canceller to cancel a far end echo from a near end siplal, comprising:

an adaptive filter to filter a far end signal; **(fig. 5, adaptive filters 160,156,158; col. 9, lines 45-47; col. 9, lines 33-36)**

logic to detect whether the near end signal comprises speech, **(fig. 5, signal v(n); col. 11, line 60 – col. 12, line 1; col. 9, lines 39-42)** the logic disabling the

adaptation of the filter when the near end signal comprises speech; and **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

a difference operator to cancel the far end echo from the near end signal using the adaptively filtered far end signal. **(fig. 5, part 148 is a summer but is taking a negative signal from switch 162)**

Regarding claim 34, Sih further discloses comprising a delay circuit in a path of the composite signal coupled to the difference operator, the composite signal being coupled to the logic before the delay circuit. **(fig. 5, part hpf is before difference operator)**

Regarding claim 35, Sih further discloses the delay circuit comprises a filter **(fig. 5, part 164)**

Regarding claim 38, Sih further discloses filter adaptation is disabled by holding adaptation coefficients constant. **(col. 14, lines 2-5)**

Regarding claim 39, Sih further discloses comprising a first estimator to estimate an absolute value of a parameter of the composite signal, and a second estimator to estimate a parameter of the first signal, wherein the logic compares the absolute value of the composite signal parameter to an estimated maximum of the first signal parameter and detects the second signal as a function of the comparison. **(col. 17, line 67- col. 18, line 11)**

Regarding claim 42, Sih further discloses a second adaptive filter to filter the first signal a second time, **(fig.5 ,parts 160,158)** and a subtractor to subtract the second filtered first signal from the composite signal to generate a pre-conditioned composite

signal, the logic detecting the second signal in the composite signal as a function of the pre-conditioned composite signal. **(fig. 5, part 148)**

Regarding claim 43, Sih discloses all the following subject matter: an echo canceller to cancel a far end echo from a near end signal, complising:

filter means for adaptively filtering a far end signal; **(fig. 5, adaptive filters 160,156,158; col. 9, lines 45-47; col. 9, lines 33-36)**

logic means for detecting whether the near end signal comprises speech, **(fig. 5, signal v(n); col. 11, line 60 – col. 12, line 1; col. 9, lines 39-42)** the logic means comprising disabling means for disabling the adaptation of the filter means when the near end signal comprises speech; and **(col. 13, lines 58-66; col. 14, lines 11-13, lines 41-43; col. 22, lines 40-43)**

canceling means for canceling the far end echo from the near end signal using the adaptively filtered far end signal. **(fig. 5, part 148 is a summer but is taking a negative signal from switch 162)**

Regarding claim 44, Sih further discloses comprising a delay circuit in a path of the composite signal coupled to the difference operator, the composite signal being coupled to the logic before the delay circuit. **(fig. 5, part hpf is before difference operator)**

Regarding claim 45, Sih further discloses the delay circuit comprises a filter **(fig. 5, part 164)**

Regarding claim 48, Sih further discloses filter adaptation is disabled by holding adaptation coefficients constant. **(col. 14, lines 2-5)**

Regarding claim 49, Sih further discloses means for estimating an absolute value of a parameter of the near end signal, and means for estimating a parameter of the far end signal, wherein the logic means comprises means for comparing the absolute value of the near end signal parameter to an estimated maximum of the far end signal parameter and means for detecting whether the near end signal comprises speech as a function of the comparison. **(col. 17, line 67- col. 18, line 11)**

Regarding claim 52, Sih further discloses a second adaptive filter to filter the first signal a second time, **(fig.5 ,parts 160,158)** and a subtractor to subtract the second filtered first signal from the composite signal to generate a pre-conditioned composite signal, the logic detecting the second signal in the composite signal as a function of the pre-conditioned composite signal. **(fig. 5, part 148)**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8,17,30,40,50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih [U.S. Pat. 5,307,405] as applied to claims 7,16,29,39,49 above, and further in view of Chu [U.S. Pat. 5,305,307].

Regarding claims 8,17,30,40,50 Sih discloses the adaptive filtering process needs to keep from clipping the input to avoid nonlinearities in the echo signal

Sih fails to disclose discloses the composite signal includes a plurality of first signal samples comprising first and second sets of the first signal samples, the first set of samples preceding the second set of samples in time, and wherein the maximum parameter estimation comprises applying a weighting function to each of the samples of the second set, estimating the absolute value of each of the weighted samples, multiplying the absolute values of the weighted samples to estimate a second maximum parameter, comparing the second maximum parameter to a first maximum parameter for the first set of the samples, the maximum estimated parameter being related to a maximum of the first and second maximum parameters.

Chu discloses the composite signal includes a plurality of first signal samples comprising first and second sets of the first signal samples, the first set of samples preceding the second set of samples in time, and wherein the maximum parameter estimation comprises applying a weighting function to each of the samples of the second set, estimating the absolute value of each of the weighted samples, multiplying the absolute values of the weighted samples to estimate a second maximum parameter, comparing the second maximum parameter to a first maximum parameter for the first set of the samples, the maximum estimated parameter being related to a maximum of the first and second maximum parameters. **(col. 8, lines 16-34)**

It would have been obvious for one skilled in the art at the time of invention to modify Sih with Chu so that the echo cancellation could be with less nonlinearities in the echo signal.

Claims 9,18,31,41,51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih [U.S. Pat. 5,307,405] as applied to claims 7,16,29,40,50 above, and further in view of Chu [U.S. Pat. 5,305,307].

Sih discloses claims 7,16,31,41,51 as disclosed above but fails to disclose applying a scale factor to the first maximum parameter.

Chu discloses applying a scale factor to the first maximum parameter **(col. 8, line 16 - B)**, the maximum estimated parameter being related to a maximum of the scaled maximum first parameter and a scaled maximum second parameter. **(col. 8, lines 16-28)**

It would have been obvious for one skilled in the art at the time of invention to modify Sih with Chu so that the echo cancellation could be with less nonlinearities in the echo signal.

Claims 24,36,46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih [U.S. Pat. 5,307,405].

Regarding claims 24,36,46, Sih discloses as above but fails to disclose the delay is a decimator.

One of ordinary skill knows that a decimator is made up of a low pass filter and then downsampling. The reason for decimation is that the decimated signal takes less convolution time then before decimation simply because there are less samples to convolve. Decimation, of course, takes some amount of time, hence it is a delay.

It would have be obvious to one skilled in the art at the time of invention to have the delay comprise a decimator so that less processing power is needed.

Claims 24,37,47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih [U.S. Pat. 5,307,405].

Regarding claims 24,37,47, Sih discloses as above but fails to disclose the delay is a buffer.

One of ordinary skill knows that a buffer delays a signal by a known amount. One of ordinary skill also knows that buffers are cheap and easy to implement. Applicant failed to disclose that the buffer used as a delay solves any specific problem or is preferable over any other method of delay which amounts to a mere design choice consideration, which fails to patentably disguish over the prior art of Sih.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. 5,305,307 – Chu – Adaptive acoustic echo canceller. Could also have been used as a 102(b) type reference.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Schultz whose telephone number is 703-305-2367. The examiner can normally be reached on M-F(7-4)(first bi-week) M-Th(7-4)(second bi-week).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

William Schultz

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